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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,396	10/10/2001	Kousei Sano	10873.822US01	1183

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EXAMINER

HUBER, PAUL W

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/975,396

Applicant(s)

SANO ET AL.

Examiner

Paul Huber

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-17 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-14 is/are allowed.
- 6) ☒ Claim(s) 1, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 2-6 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida (US-6,498,330).

Regarding claims 15 and 16, Yoshida discloses an optical head apparatus (see figure 1), comprising: a light source 1 for emitting light; a converging optical system including a light converging means 5 for converging the light emitted from the light source 1 onto an information storage medium 6; a light dividing means 2 for dividing a returning light reflected by the information storage medium 6 into a first light P3 with a larger amount of light and a second light P1 or P2 with an amount of light smaller than the amount of the first light P3; a first photo detector 7e for receiving the first light P3 and outputting a signal to reproduce information recorded on the information storage medium 6 (see col. 6, lines 29-44); and a second photo detector 7a, 7b, 7c, or 7d for receiving the second light P1 or P2 and outputting a signal to detect spherical aberration of light converged on the information storage medium 6 (see col. 8, lines 33-46). Note: since the light region 2c producing first light P3 is larger than either the light regions 2a or 2b respectively producing second light P1 or P2, it is inherent that the first light P3 has a larger amount of light than the second light P1 or P2 as claimed.

Claims 1, 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Wals (US-6,399,932).

Wals discloses an optical head apparatus (see figures 1 and 3B), comprising: a light source 6 for emitting light; a converging optical system including a light converging means 11 for converging the light emitted from the light source 6 onto an information storage medium 1; a light dividing means 32 (see figure 3B) for dividing a returning light reflected by the information storage medium 1 into a first light 34 with a larger amount of light and a second light 33 or 35 with an amount of light smaller than the amount of the first light 34; a first photo detector (not illustrated; see col. 5, lines 17-19) for receiving the first light 34 and outputting a signal to reproduce information recorded on the information storage medium 1; and a second photo detector 36 or 37 for receiving the second light 33 or 35 and outputting a signal to detect spherical aberration of light converged on the information storage medium 1 (see abstract). Note:

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since the light dividing means 32 is a diffraction optical element "for splitting the incoming beam 18 as diffracted -1^{st} , 0^{th} and $+1^{st}$ orders into three sub-beams 33, 34 and 35" (col. 5, lines 4-6), it is inherent that the first light 34 has a larger amount of light than the second light 33 or 35 as claimed.

Claims 2-6 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 10-14 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record considered as a whole fails to teach or suggest either:

1) an optical head apparatus as recited in independent claim 1, further including the "spherical aberration detecting means" as specifically recited in dependent claim 2; or

2) an optical head apparatus comprising: a light source for emitting light; a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium; a light dividing means for dividing a returning light reflected by the information storage medium into light in the first region near the optical axis and light in the second region distant from the optical axis and, one photo detector for receiving the divided light; **wherein when the difference between the amount of focus deviation of light in the first region and the amount of focus deviation of light in the second region are used to detect a spherical aberration amount of light converged on the information storage medium, the amount of change in the amount of focus deviation of light in the first deviation is equal to that in the amount of focus deviation of light in the second region when the relative distance between the information storage medium and the light converging means varies; or**

3) an optical head apparatus comprising: a light source for emitting light; a sub-beam generating means for generating a sub-beam from light emitted from the light source; a converging optical system comprising a light converging means for converging the sub-beam and a main beam other than the sub-beam onto an information storage medium; a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light; a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium; a second photo detector for receiving a second light and outputting a signal to detect aberration of the light converged on the information storage medium; **and a third photo detector for detecting a**

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returning sub-beam reflected by the information storage medium; wherein the second photo detector and the third photo detector are arranged in the direction substantially perpendicular to the first photo detector; or

4) an optical head apparatus comprising: a light source for emitting light; a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium; a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light; a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium; a second photo detector for receiving a second light and outputting a signal to detect aberration of the light converged on the information storage medium; and a judgment means for judging that a distance between the information storage medium and the converging optical means is in a certain range on the basis of a sum signal of signals from the first photo detector and the second photo detector; or

5) an optical head apparatus comprising: a light source for emitting light; a converging optical system comprising a light converging means for converging the light emitted from the light source onto an information storage medium; a light dividing means for dividing a returning light reflected by the information storage medium into a first light with a larger amount of light and a second light with an amount of light smaller than the amount of the first light; a first photo detector for receiving the first light and outputting a signal to reproduce information recorded on the information storage medium; a second photo detector for receiving a second light and outputting a signal to detect aberration of the light converged on the information storage medium; wherein the area of the detection regions of the second photo detector S1 satisfies the following relationship: $S1 \leq 4 \cdot \pi \cdot (d \cdot NA \cdot \alpha)^2 \cdot \eta_s / \eta_m$; wherein η_m denotes an amount of the first light; η_s denotes an amount of the second light; NA denotes a numerical aperture of the converging optical system; α denotes a lateral magnification of the returning path from the information storage medium to the first and second photo detectors of the converging optical system; and d denotes an optical interval between two reflection surfaces of the information storage medium having a plurality of reflecting surfaces. (bold language emphasized)

Applicant's arguments filed November 12, 2004 have been fully considered but they are not persuasive.

Regarding Yoshida and claims 15 & 16, the applicant argues that "claims 15 and 16 should be reconsidered allowable as the matters of claim 1 is included in claim 15 ..., and is included in claim 16 ..." The "matters of claim 1" being the new limitation of claim 1 which recites that the first photodetector receives a first light and outputs a signal that is sufficient itself for reproducing information recorded on an information storage medium. However, neither

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claim 15 nor claim 16 recites this new limitation. In Yoshida, a first photo detector 7e receives the first light P3 and outputs a signal to reproduce information recorded on the information storage medium 6 (see col. 6, lines 29-44).

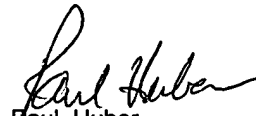
Accordingly, the rejection is deemed proper and is maintained.

Regarding Wals and claims 1, 15 & 16, the applicant argues that "contrary to the assertion in the rejection, detectors 36 and 37 are provided for generating a tracking error and a defocus error signal, not for generating a signal to detect aberration of light converged on the information storage medium..." The examiner respectfully disagrees. Wals discloses that "FIGS. 3A, B and C show embodiments of detection systems 19 and the division of the reflected beam 18 over two detection systems. One detection system is arranged before the Gaussian focus and one detection system after the Gaussian focus in order to determine the wavefront aberrations in the beam 18" (col. 4, lines 54-59). Therefore, in the FIG. 3B relied upon in the rejection of the claims, the one detection system 37 is arranged before the Gaussian focus and the other detection system 36 is arranged after the Gaussian focus "in order to determine the wavefront aberrations in the beam 18" as claimed. Accordingly, the rejection is deemed proper and is maintained.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Paul Huber at telephone number 571-272-7588.


Paul Huber
Primary Examiner
Art Unit 2653

pwh
March 21, 2005